**Review 1:**

11/8/17

Jamil Mangrio

Haptic feedback aiding in navigation

Hollington, J. (2015). Getting haptic feedback for walking directions in Google Maps. *iLounge*. Retrieved from <http://www.ilounge.com/index.php/tips/comments/getting-haptic-feedback-for-walking-directions-in-google-maps>

The purpose of this article is to take notice of the haptic output setting on Google Maps. This is significant because it provides information regarding which navigation system to use and why. The fact that Google Maps has some degree of haptic output means that it is a viable option in the building of this project. More importantly, Google Maps sends notifications to the device it working on when giving directions. This is significant because it opens a world of opportunities for methods of taking outputs from the app when it is time to make a turn. The notifications from the app can be used to activate a haptic device which will be designed to be more intuitive than the current haptic output from the app itself.

**Review 2:**

11/8/17

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Texas Instruments. (2014). Haptic + Bluetooth Kit Enables Tactile Feedback Prototyping To Go. Retrieved from <http://www.electronicdesign.com/embedded/haptic-bluetooth-kit-enables-tactile-feedback-prototyping-go>

This article is an informational piece about a haptic bluetooth kit designed for the purpose of taking outputs from a device with bluetooth capability and triggering haptic output to a separate device. This would make the project very easy, as it allows processing of notifications from Google Maps and outputting them in easily customizable frequencies. The project will not use this device, however, as its clunky design would not make for a good wearable. Having said that, it is worth to study the design of this device and learn from its method of producing a separate haptic output from a device’s notification system. The design of this device will likely influence the design of the final product in terms of using an app to process notifications and output them to a wearable device.

**Review 3:**

11/8/17

Jamil Mangrio

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N. Joseph. (2014, August 5). Smart driving shoes provide Bluetooth-connected haptic feedback [w/video]. Retrieved from <https://www.autoblog.com/2014/08/05/smart-driving-shoes-bluetooth-haptic-vibrating-video/>

This article gives an example of a wearable device which utilizes haptic feedback for the purpose of navigation (in this case while driving). The product described is a pair of insoles which vibrate when it is time to take a turn according to the navigation system to which they are connected. The point of the shoes is to reduce the need for the driver to take their eyes off the road while driving. There are some issues with this product, however, such as the fact that Audible directions are much more helpful when driving than simpler haptic suggestions. They can be much more complex than vibration, telling the driver the street name or exit number, and do not distract the driver’s attention away from the road. However, the concept of the product can be utilized for pedestrians, who cannot use audio directions unless using headphones, which can seem unprofessional or can cause a distraction from the surrounding environment which may prove to be dangerous. The usage of smart insoles is also a design factor to consider in this project as opposed to an ankle bracelet of some form.

**Review 4:**

11/8/17

Jamil Mangrio

Haptic feedback aiding in navigation

Schwebel, D. C., Stavrinos, D., Byington, K. W., Davis, T., O’Neal, E. E., Jong, D. d. (2012). Distraction and pedestrian safety: How talking on the phone, texting, and listening to music impact crossing the street. Science Direct. Retrieved from <http://www.sciencedirect.com/science/article/pii/S0001457511001965>

This study of how distractions from the usage of devices can affect pedestrian distraction level and danger. The study found a clear correlation between the amount of accidents involving pedestrians with their usage of a personal device while walking. Even, if they were not looking at the device and were instead listening to music with headphones while looking where they were going, their awareness of what was going on in the surrounding area was greatly decreased. This is significant to this project because the aim of the design is to decrease distraction due to the device, especially for people who do not know the layout of the area they are walking in too well. This study highlights the safety aspect of this project.

**Review 5:**

11/8/17

Jamil Mangrio

Haptic feedback aiding in navigation

National Center for Statistics and Analysis. (2017, February). Pedestrians: 2015 data. (Traffic Safety Facts. Report No. DOT HS 812 375). Washington, DC: National Highway Traffic Safety Administration.

This informational article provides statistics on the percentage of accidents which involves pedestrians, and how that percentage has increased over the last decade. This is greatly due to the increase in usage of personal devices by pedestrians over the last ten years, as they are becoming increasingly distracted and are more prone to accidents. This article is important to the project because it highlights the significance of distraction in pedestrian safety. This design could greatly help pedestrians (especially those who aren’t familiar with the area they are in) stay aware of their surroundings by reducing one seemingly necessary distraction - navigation. The design allows pedestrians to keep their eyes and ears focused on the hazards around them as opposed to a device on which a route is being shown to them.